CLAIMS

1. Device for measuring the contrast of fringes in a full-field Michelson interferometer, comprising means for deflecting two incoming perpendicular polarizations in two different emerging directions, these means of deflection being arranged within the interferometer as a substitution for the single polarizer.

2. Device according to claim 1, characterized in that the means of deflection comprise a Wollaston prism (W; Fig.5).

3. Device according to claim 2, applied to a Michelson interferometer implemented in an optical coherence tomography "OCT" system.

4. Device according to claim 3, characterized in that it is arranged to carry out measurements for path differences of $\lambda/2$ or $\lambda/4$.

5. Device according to claim 4, characterized in that it is arranged so as to obtain at least two measurements, strictly simultaneous and in phase opposition.

6. Device according to one of claims 3 to 5, characterized in that it is arranged in order to carry out four measurements, and in that it also comprises means to separate the beam into two, means to generate, in one of the two beams produced, an additional delay of $\lambda/4$ between the polarizations originating from the two arms of the interferometer, and means to reintroduce together the two beams thus processed into the means of deflection such that, on output from the latter, there are then four beams.

7. Device according to claim 6, characterized in that the separator means comprise a single non-polarizing separator plate (BSP/M).

8. Device according to one of claims 6 or 7, characterized in that the delaying means comprise a quarter-wave plate (QOP/M).

9. Device according to any one of claims 6 to 8, characterized in that the Wollaston prism (W) is arranged in a pupil plane.

10. Device according to any one of claims 6 to 9, characterized in that it also comprises means to arbitrarily orientate the polarizations of four incident beams relatively to the Wollaston prism's own axes.

11. Device according to claim 10, characterized in that the means of orientation comprise a half-wave plate (DOP/M) preceding the Wollaston prism (W).

12. Method for measuring the contrast of fringes in a full-field Michelson interferometer, comprising a deflection of two incoming perpendicular polarizations in two different emerging directions, by means of a Wollaston prism (W).

13. Method according to claim 12, used in an optical coherence tomography "OCT" system.

14. Method according to claim 13, characterized in that it comprises measurements for path differences differing by $\lambda/2$ or $\lambda/4$.

15. Method according to claim 14, characterized in that it comprises at least two measurements, strictly simultaneous and in phase opposition.

16. Method according to any one of claims 13 to 15, characterized in that it comprises four measurements, a separation into two of the beam, a generation, in one of the two beams produced, of an additional delay of $\lambda/4$ between the polarizations originating from the two arms of the interferometer, and a reintroduction of the two beams thus processed into

the means of deflection such that, at the output from the latter, there are then four beams.

17. Method according to claim 16, characterized in that it also comprises an arbitrary orientation of the polarizations of the four incident beams relatively to the Wollaston prism's own axes (W).

18. Method according to claim 17, characterized in that the measurements on the four beams are carried out simultaneously.

19. Method according to one of claims 1 to 18, characterized in that it comprises, in the measurement arm, a compensation of the effects of the focal chromatism of the eye.

20. Method according to one of claims 1 to 19, characterized in that it comprises, in the reference arm, means for compensating for the dispersion of the path differences.

21. Method according to one of claims 1 to 20, characterized in that it comprises a control of the wave front analyser (SH) obliging it to work in out-of-focus.

22. System for examining the eye by *in vivo* tomography, comprising:
- a Michelson interferometer, producing a full-field OCT set up,
- adaptive optical means, arranged between the interferometer and an eye to be examined, producing a correction of the wavefronts originating from the eye as well as those reaching the eye, and
- means of detection, arranged downstream of the interferometer, making it possible, without synchronous modulation or detection, to carry out the interferometric measurement according to the optical coherence tomography (OCT) principle,

characterized in that it also comprises a device for measuring the contrast of the fringes in a full-field Michelson interferometer, this device comprising

means of deflecting two incoming perpendicular polarizations in two different emerging directions.

23. System for examining the eye according to claim 21, characterized in that it also comprises a sighting device comprising at least one moving target having a programmable shape and trajectory, this at least one target being displayed on an appropriate screen, visible by both eyes, during the examination period.

24. System according to one of claims 21 and 22, characterized in that the reference source (SLD) is inserted into the optical path between the adaptive optical means (MD) and the eye to be examined (OEX).

25. System according to one of claims 21 to 23, characterized in that it comprises, in the measurement arm, means of compensation for the effects of the focal chromatism of the eye.

26. System according to one of claims 21 to 24, characterized in that it includes, in the reference arms, means of compensation for the dispersion of the path differences.